

## ADDITIONS TO THE FLORA OF COLORADO - XII

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### ABSTRACT

Twenty-nine indigenous and six adventive species are reported new to the Colorado Flora; eight notable range extensions are recorded. *Cardaria latifolia* is resurrected for *Lepidium latifolium*. *Viola scopulorum* and *V. rydbergii* are resurrected for *Viola canadensis* sens. lat. in Colorado, and the report of *Trichophorum caespitosum* is rejected.

KEY WORDS: Nomenclature, floristics, biogeography, Colorado, United States.

The eleventh number of this series was published in *Phytologia* 58:385-388, 1985. Several of these names were used in Weber, W.A. *Colorado Flora: Western Slope* (1987) but the herbarium records have not been published. All specimens cited are from Colorado, United States and are in Herbarium COLO unless otherwise specified.

### INDIGENOUS SPECIES

*Abronia nana* S. Wats. (NYC). Mesa Co.: Sinbad Valley, 2 mi NW. on right fork in valley, on gypsum outcrops of the Paradox Salt Member, Hermosa Formation, with scattered piñon and juniper, 5,750 ft. alt., T49N R19W S5 SW 1/4, 27 April 1987, J. Anderson 87-29.

*Astragalus pubentissimus* T. & G. (FAB). Rio Blanco Co.: ridge SE of Raven Ridge, T2N R103W S19, SW1/4, 5,475 ft. alt., on sandstone with *Gilia stenothyrsa*, *Eriogonum saurinum*, and *Distichlis*, 17 June 1981, S. Tabar 169 (CS).

*Astragalus wootonii* Sheldon (FAB). Conejos Co.: 0.5 mi SSE of Canyon. 2.5 mi SW of Las Mesitas, T32N R8E S6/7, 8,700 ft. alt., NW exposure with *Pinus ponderosa*, *Artemisia*, *Chrysothamnus*, *Poa* and *Festuca*. 21 June 1987, P. Douglas 1576 (CS). A range extension from northern New Mexico.

*Bromopsis pubescens* (Mühl. ex Willd.) Holub (POA). Boulder Co.: Green Mt., just W of Boulder, Long Canyon, NW slope, 7,000 ft. alt.: forming conspicuous stands of very tall plants with large inflorescences and pendent, broad

leaf laminae, with many internodes, 26 July 1989, *Weber & Hogan 18044* (*Bromus purgans* and *B. latiglumis* of Harrington (1954).

*Carex lasiocarpa* Ehrh. (CYP). Park Co.: Park Range, SE of Big Creek Lake just W of Pleasant Valley Ditch, T11N R82W S27, 9,100 ft. alt., floating mat fen, 2 Aug 1989, *Neely & Carpenter 5328*. A range extension from Montana and Idaho.

*Carex livida* (Wahlenb.) Willd. (CYP). Park Co.: East Lost Park, in a quaking fen, with *C. limosa*, *C. tenuiflora*, and *Eriophorum gracile*, 16 July 1989, *Weber & Cooper 18034*. A range extension for the Rocky Mountains south from Montana and Idaho.

*Carex tenuiflora* Wahlenb. (CYP). Park Co.: East Lost Park, in a quaking bog, with *C. limosa*, *C. livida*, and *Eriophorum gracile*, 16 July 1989, *Weber & Cooper 18036*. New to the contiguous western United States, a westward range extension from Minnesota.

*Ceanothus martinii* Jones (RHM). Rio Blanco Co.: 36 mi SW of Meeker, 3.9 mi up Swizer Gulch from Black Sulphur Gulch, Yankee Gulch Quadr., T3S R99W S14, dry, coarse shaly slope, 31 May 1977, *Zeise & Bartmann 3081*. Garfield Co.: mesa top near Logan Wash, 2,438 m. alt., July 1975, *Irvine & Gregory* (COLO 293895, photo of specimen at UAC). The report alluded to from Boulder County (Harrington 1954) proves to be a vegetatively spreading colony of the hybrid, *C. fendleri* X *C. herbacea*.

*Cirsium barnebyi* Welsh & Neese (AST). Rio Blanco Co.: Piceance Creek road just upstream from Rock School, extremely abundant on shales from here to upper end of canyon below Rio Blanco, 8 July 1986, *Weber 17808*.

*Cirsium ownbeyi* Welsh (AST). Rio Blanco Co.: Cross Mountain Gorge, T6N R97-98W, 1,800 msm., on steep sided canyon of sedimentary bedrock, talus slopes of weathered limestone, 19-20 Sept 1978, *Northcutt & Bunin* (COLO 318787).

*Corydalis micrantha* (Engelm.) A. Gray (FUM). Baca Co.: stabilized dunes along Cimarron River, 18 May 1981, *Colson & Wittmann 1635*.

*Eragrostis lutescens* Scribn. (POA). Jefferson Co.: infrequent on drying shore of small pond just W of Church's Lake, 1 mi S of Broomfield, 10 Oct 1953, *Weber 8660*.

*Eriogonum clavellatum* Small (PLG). Montezuma Co.: open slope north-east of Four Corners, *Harrington 10103* (CS,Reveal); Aneth Road, SE of Towaoc. W and S of Sentinel Peak, T33.5N R18W S28, 1,750 m. alt., 15 May 1986, *O'Kane & Anderson 2344* (COLO).

*Eriogonum leptocladon* T. & G. var. *leptocladon* (PLG). Mesa Co.: Rabbit

Valley, 3 mi S of I-70 interchange, 4,800 ft. alt., on slopes toward Colorado River. Aug 1983. *Joan Young 204*.

*Eriogonum leptocladon* T. & G. var. *ramosissimum* (Eastw.) Reveal (PLG). Montezuma Co.: State Line SE of Aneth, 6 Sep 1978, *J. Scott* (COLO 318876).

*Frasera paniculata* Torr. (GEN) Mesa Co.: Dolores River Canyon, W side, 0.2 mi E of State Line, on colluvial slopes and washes of derived from Cutler Formation, 4,600 ft. alt., T51S R104W S17, 16 June 1988, *J. Anderson 88-58*.

*Hilaria rigida* (Thurb.) Benth. (POA). San Miguel Co.: McIntyre Canyon, *Clair Button s.n.* (a reliable sight record).

*Juncus tweedyi* Rydb. (JUN). Larimer Co.: Rocky Mountain National Park; Moraine Park, on glacial alluvium, 8,000 ft. alt., 9 July 1988, *Yeatts 1943*.

*Lemna minuscula* Herter (*L. minima* Phil.) (LMN). Grand Co.: Shadow Mt. Dam, 30 May 1960, *Douglass 60-10*. Boulder Co.: South Boulder Creek SW of Cherryvale Road, 15 Aug 1985, *Weber 17498*. Alamosa Co.: 0.25 mi E of jct. State Hwy 17 and US Hwy 160, 7,540 ft. alt., 11 July 1986, *O'Kane 2515*. Rio Blanco Co.: near Marvine Lakes Trailhead, 15 June 1988, *Weber 17909*.

*Lemna turionifera* Landolt (LMN). Many collections, verified by Landolt, from Alamosa, Archuleta, Boulder, Denver, Elbert, Jefferson, La Plata, Larimer, Moffat, Routt, Sedgwick, Weld and Yuma counties.

*Lesquerella arenosa* (Richardson) Rydb. var. *argillosa* Rollins & Shaw (BRA). Logan Co.: clay ridges NE of Julesburg Reservoir, 1,200 m. alt., 21 May 1983, *Weber & Wittmann 16627, 16635*; 9 July 1983, *Wittmann 2262*.

*Mahonia haematocarpa* (Wooton) Fedde (BER). Las Animas Co.: south of Trinidad, 1902, *Archibald* (COLO 42840).

*Mimulus breweri* (Greene) Coville (SCR). Boulder Co.: Wild Basin entrance road E of Deer Haven, 16 June 1962, *Willard 627, 628*; Rainbow Lakes road, 10,000 ft. alt., 30 June 1949, *Livingston 172*. Eagle Co.: Gore Range, Eagle's Nest Wilderness area, 19 June 1987, 16 June 1988, *Hogan 232, 389, 391*. Grand Co.: Rocky Mt. Nat. Park, East Inlet, 27 June 1962, *Douglass 62-16, 23*; North Inlet trail, 2 mi N of Grand Lake, 29 June 1962, *Douglass 62-32*. Larimer Co.: Rocky Mt. Nat. Park; Fall River Road, 10,000 ft. alt., 8 July 1970, *Weber & Grove 14063*; between Dream and Nymph Lakes, 154 July 1959, *Willard 596*. Summit Co.: vicinity of Dillon, 4 June 1982, *Weber & Jackson 16137*.

A small and inconspicuous, relatively rare *Mimulus* inhabiting moist seepages, in thin humus layers on rock ledges in the subalpine forests of Colorado. Characteristically, it is a slender, unbranched annual a few centimeters tall, with only the basal cotyledons and one or at most two internodes; the uppermost node bears one or a few very small flowers, either yellow or purplish, in the leaf axils; these persist after anthesis. The species occurs in most of the western states, the Colorado stations representing the southeasternmost extension of range.

*Oxybaphus glaber* S. Wats. (NYC). Phillips Co.: sand hills 12 mi S of Holyoke, July, 1949, *Weber 5026*. Prowers Co.: 1 mi S of Holly, 3 Sep 1987, *McGregor 38455*. Weld Co.: sand hills, Roggen, 12 Sep 1934, *Ramaley 14539*, 14 Sep 1937, *Ramaley 16297*.

*Oxybaphus decumbens* (Nutt.) Sweet (NYC). Baca Co.: S facing slope of mesa N of forest road 551, T35S R49W S7, 1,450 m. alt., 17 May 1981, *Colson & Wittmann 1617*. Probably *O. bodinii* Holz. (1893), the type from Pueblo, is synonymous although the leaves (Plate xxi), are much narrower than those of our collections. Standley (1909), p. 344, cited [*Allionia*] *bodinii* from Pueblo, Larimer and Weld counties, and [*A.*] *decumbens* from Pueblo County (both by the same collector, Brandegee. (The species of *Oxybaphus* with axillary inflorescences are little known. Neither species was listed by Harrington (1954).

*Packera pauciflora* (Pursh) Löve & Löve (AST). Park Co.: South Park, quaking fen, High Creek, 10 mi S of Fairplay, 15 July 1989, *Weber & Cooper 18016*. A range extension southward from northern Wyoming.

*Pinus strobiformis* Engelm. (PIN). La Plata Co.: San Juan Mts., Electra Lake, along trail to Ignacio Lake, 26 Sep 1987, *M. Edwards* (COLO 431846). This species is common along the southern tier of counties as far east as the east base of Wolf Creek Pass.

*Prosopis glandulosa* Torr. (FAB). Las Animas Co.: Mesa de Maya; in gap between east and west sections, on Willard Loudon ranch NW of Branson; N-facing slope of Philips (Hardesty) Canyon between Kelly and Nestor branches; two shrubs, badly winter killed, with new growth 1 meter tall, 23 Aug 1985, *Weber & Hogan 17516*. Known to the Loudon family from the time of the original homestead (1901-1902), 5,500-6,000 ft. alt., T35S R55W S9, Cobert Mesa North Quad. 1972. This is the first herbarium record for Colorado since Greene collected it in midwinter "in mountains between the Purgatory and Apishapa, 30 mi N of the state line" on Jan 21, 1880 (letter to Asa Gray at GH), and the northernmost locality known for the species.

*Salix myrtilifolia* Andersson (SAL). Park Co.: South Park, along High Creek, ca 10 mi S of Fairplay, in extremely rich fen fed by calcareous seeps,

with *S. planifolia* and *S. candida*, low and spreading, not at all glaucous. 22 June 1989, *Cooper s.n.* (COLO 442562, CAN), !G. Argus. Unreported in western North America south of about 60° N. in Alaska and Canada.

#### ADVENTIVE SPECIES

*Apera interrupta* (L.) P. Beauv. (POA). Yuma Co.: Arikaree River, 3 mi NE of Beecher Island, T2S R43W S12, 3,470 ft., Beecher Island NW Quadr., riverbottom, 10 June 1988, *Neely 5114*. !C. Reeder.

*Bothriochloa bladhii* (Retz.) S.T. Blake (POA). Kit Carson Co.: 6 mi. W of Stratton on roadside, Hwy. I-70, 1 Nov 1981, *Brooks 15630*.

*Juncus effusus* L. (JUN). Boulder Co.: South Boulder Creek, on Rolling Rock Ranch near Marshall, 20 July 1986, *Cooper 1653*. Probably introduced with wetland reseeding projects.

*Lepidium strictum* (S. Wats.) Britton (BRA). San Miguel Co.: Little Gypsum Gap, N of Gypsum Gap, piñon-juniper woodland, 30-31 May 1982, *Siplivinsky & Beck 3407*. More likely to be adventive than a natural disjunction from the Far West.

*Lotus tenuis* Waldst. & Kit. (FAB). Boulder Co.: White Rocks, 7 July 1928, *Ramaley 12020* (!Ottley); abundant in old pasture, Valmont Road, E of Boulder, 1 July 1946, *Weber 4208*; East Jay Road for 0.5 mi on each side of North 63rd, NW of Boulder, 22 June 1986, *Stitzel* (COLO 198122). This species has persisted without spreading more than a few miles beyond the original stand colonized over 60 years ago.

*Salix alba* L. var. *vitellina* (L.) J. Stokes (SAL). Harrington (1954) listed *S. fragilis* for Colorado but evidently neglected to include the equally common escaped or persistent *S. alba*. I cite one specimen for the record. Jefferson Co.: 2 mi S of Broomfield on Wadsworth Blvd., 10 June 1962, *Chambers 190*.

#### MISCELLANEOUS TAXONOMIC NOTES

*Cardaria latifolia* (L.) Spach (BRA). *Lepidium latifolium* L. is anomalous in the genus, since it is a very tall rhizomatous perennial with masses of paniculate inflorescences which hardly elongate with age, silicles that are not notched but are inversely cordate and somewhat inflated, with an oval, not slender replum. Its placement, by Spach, in *Cardaria*, has been ignored for over a hundred years. At the present time, this species is a rampant weed all over

the low areas of Colorado, invading ditches and wetlands on both sides of the Continental Divide.

Rollins (1940) listed the characteristics separating *Cardaria* from *Lepidium* as follows: 1. The fruits of *Cardaria* are indehiscent, those of *Lepidium* are dehiscent. 2. The siliques of *Cardaria* are neither strongly flattened nor carinate margined, while in the rest of *Lepidium* they are strongly flattened contrary to the narrow septum and the margins are either carinate or at least strongly compressed. 3. The siliques of *Cardaria* are somewhat inflated; those of *Lepidium* are not. The nectar glands of *Cardaria* are comparatively large and well developed, completely surrounding the base of the single stamens and subtending the paired stamens; in *Lepidium* they are small, poorly developed, merely subtending the single stamens and only weakly developed below the paired stamens, or are absent.

*Lepidium latifolium* fits all of the criteria for *Cardaria* except for the fact that the siliques are tardily dehiscent rather than strictly indehiscent. In addition, it is worth noting that, whereas in *Lepidium*, the racemes elongate very much after anthesis, in *Cardaria* the racemes remain foreshortened even in fruit. In view of these facts, I suggest that *Cardaria latifolia* (L.) Spach be revived. The species is variable in the presence or absence of scattered long hairs on the silicles. In the Colorado material these hairs are present.

"*Viola canadensis*" in the Rocky Mountains. Recent floras dealing with the Rocky Mountain states and the Great Plains uniformly reduce all variants of this group simply to *V. canadensis* L., a notable exception being the recognition of var. *rugulosa* (Greene) C.L. Hitchc. (Great 1986). Fernald (1950) distinguished these taxa as species as follows: *V. rugulosa*: "differing [from *V. canadensis*] in the elongate cord-like subterranean stoloniferous rhizome and slender crowns; upper leaves more broadly ovate and more abruptly tipped; stipules more scarious; seeds 2-2.2 mm long [vs. 1.5-2 x 1.2-1.5 mm]." Most floras have not followed Fernald in giving the variety specific status. I believe it is time to open up the entire question of the taxonomy of the *V. canadensis* group, because it appears that in Colorado, at least, two clear species are involved, and neither of them appears to belong to *Viola canadensis* of the eastern United States.

Field observations indicate that two distinct entities can be recognized. These occur in the same areas and are distinguishable on morphological and ecological grounds. The first is the plant which Gray called *V. canadensis* var. *scopulorum*. It is a plant of relatively dry sites, often among rocks, in the foothills. It ranges from the southern Rocky Mts. south into northern México. Characteristically, it has small, dark green leaves, longer than wide, and small flowers. The plant is glabrous or so nearly so that the hairs, if present, are extremely short and almost invisible with a hand lens. Compared to *V. canadensis* sens. str., the flowers are about half the size (also noted by

Greene 1902). This plant is Gray's var. *scopulorum*. I would propose that, at our present state of knowledge, this plant be referred to as *V. scopulorum* (A. Gray) Greene.

The second is the plant which is currently passing as *V. canadensis* var. *rugulosa* (Greene) C.L. Hitchc., or *V. rugulosa* Greene. The name was used by Greene for a specimen known to him from only one collection, Sandberg, Minnesota: Hennepin Co., rich woods, June 1891. He described this as having "petals rather small, otherwise much as in *V. canadensis*." On the next page, Greene described *V. rydbergii*, which he referred to as "the so-called *V. canadensis* of the more northerly Rocky Mountains." This plant was described as having the leaves "underneath decidedly hirsutulous, with shorter hairs scattered over the whole surface, but the stems glabrous; the broad leaves from subreniform in the lowest, to ovate-lanceolate in the uppermost, all more or less truly acuminate, the largest more than 3 inches broad...; corollas much as in *V. canadensis* though notably broader in proportion to their length."

The description of *V. rydbergii* Greene matches the second entity, a plant of moist stream-sides and canyon bottoms, usually in shade, with flowers twice the size of *V. scopulorum*. The large, pale green, acuminate, very broadly ovate, almost reniform, leaves, pilose on the veins beneath contrast distinctly with the features of the latter. The two species occur in the same canyons within a few feet of each other, where the habitat gradient is steep, and do not intergrade. Probably their infrequent sexual reproduction insures the separation. Pending future research, I believe it wiser to go with the name that Greene based on a Colorado type, rather than apply a name based on one collection from Minnesota. Therefore, I propose that the name *V. rydbergii* Greene be used for the Rocky Mountain species.

## RANGE EXTENSIONS AND REDISCOVERIES

*Aster alpinus* L. subsp. *vierhapperi* Onno (1932) (AST). The Colorado record was based on an old collection: Grand Co.: Berthoud Pass, Jul 1903, Tweedy 5797 (!NY). We can now report a second collection: Mineral Co.: La Garita Wild Area, Upper Rat Creek through Spring Creek Divide, 11-13 Aug 1968, Willard 686. This is on the Continental Divide north of Creede, T43N R1W S22-24.

The subspecies was based mainly on the presence of minute, short, biserial trichomes scattered on the stems and phyllaries.

*Carex scirpoidea* Michx. (CYP). Park Co.: High Creek, 10 mi S of Fairplay, abundant in a quaking calcareous fen, 15 Jul 1989, Weber & Cooper 18027. Also noted in Sacramento Gulch NW of Fairplay and in Lost Park fens. Known

in Colorado previously from an historic specimen collected in South Park by John Wolf.

*Carex viridula* Michx. (CYP). Park Co.: High Creek, 10 miles S of Fairplay, in a quaking calcareous fen, 15 Jul 1989, *Weber & Cooper 18021*. Previously known in Colorado from the San Juan Mountains and North Park.

*Comarum palustre* L. (ROS). Jackson Co.: Park Range, Large kettle lake just N of Shafer Creek, N of Fryingpan Basin Trail, T10N R82W S10, 9,180 ft. alt.; in *Sphagnum* mat with *Drosera rotundifolia*, 7 Aug 1989, *Neely & Carpenter 5395*. First record for the eastern slope of Colorado.

*Descurainia ramosissima* Rollins (BRA). Park Co.: South Park, roadside weed, access road to High Creek fens, 15 Jul 1989, *Weber & Cooper 18018*. A range extension north from the San Luis Valley. This new species, it seems to me, is most likely a recently developed race of *D. richardsonii* with an aggressively weedy propensity rather than a species in its own right.

*Drosera rotundifolia* L. (DRS). Jackson Co.: Park Range: large kettle lake between Shafer and Goose Creeks, N of Fryingpan Basin Trail, T10N R82W S10, 9,140 ft. alt.; in *Sphagnum* mat, 3 Aug 1989, *Neely & Carpenter 5387*. Previously known from a very small population at a single station in Gunnison County, an iron fen on Mt. Emmons, near Crested Butte.

*Eriophorum gracile* K. Koch (CYP). Park Co.: Lost Park, forming large areas in quaking fens in the drainage of East Lost Creek, 16 Jul 1989, *Weber & Cooper 18035*. Also collected in a peat fen in Sacramento Gulch, NW of Fairplay, 16 Jul 1989, *Weber & Cooper 18040*. Jackson Co.: kettle lake due S of Big Creek Lake, T11N R82W S28, 9,350 ft., Pearl 7.5 Quad., 2 Aug 1989, *Neely & Carpenter 5364*. From a distance, populations of the species can be distinguished en masse by the reddish tinge given by the leaf tips. The single locality previously known for this species, a meadow near Stonewall. Las Animas Co., was drained and converted to a horse pasture.

*Salix candida* Fluegge (SAL). Park Co.: South Park, High Creek calcareous fens, 10 mi S of Fairplay, 15 Jul 1989, *Weber & Cooper 18022*. At this station the species is very abundant, occurring along with *S. myrtilifolia*, *S. wolfii*, *S. brachycarpa* and *S. planifolia*. Otherwise, the species is known from the Laramie River near Cameron Pass.

#### REJECTED TAXA

*Trichophorum caespitosum* (L.) Hartm. The specimen forming the basis for the Colorado record, a Hall & Harbour collection (G), so identified by C.B.



Clarke. has been examined. It proves to be identical to the two other sheets of the same collection, which belong to *T. pumilum* (Vahl) Schinz & Thell. It is noteworthy that *T. caespitosum* occurs in the Uinta Mts. of Utah, where evidently *T. pumilum* is absent.

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